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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/785,239	02/23/2004	Yong-Ho Yang	1190860-991260	1042
26379	7590	03/15/2006	EXAMINER	
DLA PIPER RUDNICK GRAY CARY US, LLP			QI, ZHI QIANG	
2000 UNIVERSITY AVENUE			ART UNIT	
E. PALO ALTO, CA 94303-2248			PAPER NUMBER	
			2871	

DATE MAILED: 03/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/785,239	YANG ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Mike Qi	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-10,13,17-19,21 and 22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-10,13,17-19,21 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections*

1. Claim 22 is objected to because of the following informalities: in claim 22, lines 5-6, recites "... , the contact hole extending through the organic layer;. . ." should be - - . . . , the contact hole extending through the dielectric layer;. . . - - Because the claims 21 and 22 describe a dielectric layer over the thin film transistor. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 4, 6-9, 13, 17-18 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0214621 A1 (Kim et al) in view of US 6,839,099 B2 (Fukunishi).

Regarding claims 1, 8, 18 and 21, Kim discloses (paragraphs 0054-0064; Figs.5, 9 and 11) a liquid crystal display comprising:

- first member; such as first substrate (101) and first electrode (106) (common electrode) (see Fig.11 as the upper substrate);
- second member; such as second substrate (90), gate line (60), gate electrode (64), gate insulating layer (66), drain line (data line 62), dielectric layer

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(protective layer 76 formed of insulating material as the dielectric layer) deposited over the second substrate (90); and a capacitor (the storage electrode 73 and the metal film 60a forming a capacitor with an insulating layer 66, such that a contact hole (88) extending to the capacitor (see Fig.5 and 9 as the lower substrate); and the second member coupled to the first member;

- spacer (84) and spacer (108) would be constitute one spacer being positioned between the first member and the capacitor set forth above, and being positioned between the first member and the contact hole (88) set forth above, so as to keep a cell gap between the first member (upper substrate) and the second member (lower substrate) (see paragraphs 0061-0064);
- liquid crystals, inherently, positioned in the cell gap.

Kim does not explicitly disclose that the second member (lower substrate) has an auxiliary line and auxiliary electrode; and the capacitor is formed on the auxiliary line; and the drain electrode extending to the auxiliary electrode to form the capacitor.

Fukunishi discloses (col.1, line 38 – col.2, line 19; Figs.9-10) that the lower substrate (81) has an auxiliary capacitance electrode (93) as the auxiliary line and an auxiliary electrode (86a); and the capacitor (95) is formed on the auxiliary line (93); and the drain electrode (86) extending to the auxiliary electrode (86a). Fukunishi indicates (col.1, lines 38-45) that such liquid crystal display panel is a conventional liquid crystal display device and such structure is commonly known. Fukunishi further teaches (col.1, lines 14-18) that in order to form a storage capacitance which is serially connected to

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the pixel electrode, the auxiliary capacitance electrode is formed through the same manufacturing steps as with the gate wiring, so that would simplify the manufacturing process.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the liquid crystal display of Kim with the teachings of using drain electrode extending to an auxiliary electrode and an auxiliary line to form capacitor on the auxiliary line as taught by Fukunish, since the skilled in the art would be motivated for using the same manufacturing steps as with the gate wiring to form a capacitance so as to simplify manufacturing process (see col.1, lines 14-18).

Regarding claims 2, 4, 6-7, 9, 13, 17 and 22, Kim discloses (paragraphs 0054-0064; Figs.9, 11) a liquid crystal display comprising:

- second electrode (pixel electrode 78) positioned on the capacitor (the storage electrode 73 and the metal film 60a forming a capacitor with an insulating layer 66); wherein the spacer (84) is adjacent to the first and second electrodes (common electrode and pixel electrode);
- dielectric layer (the protective layer 76 formed of insulating material as the dielectric layer) deposited over the capacitor (and over the thin film transistor 72, 64, 74), a contact hole (88) formed above the capacitor and extending through the dielectric layer (76), and a second electrode (pixel electrode 78) formed in the contact hole (88), and positioned on the dielectric layer (76); wherein the spacer (84) is positioned adjacent to a portion of the second electrode (78) that is located in the contact hole (88), and is also adjacent to

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the first electrode (common electrode) and second electrode (pixel electrode) in the contact hole (88);

- the spacer (84) is a column spacer (as shown in Fig.9);
- second member (lower substrate 90) further comprises a thin film transistor (64,72,74);
- a black matrix (102) positioned near the spacer (108) (when forming the liquid crystal display device, the spacer 108 and the spacer 84 should constitute one spacer) so as to prevent the spacer from affecting an image projection.

4. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim and Fukunishi as applied to claims 1-2, 4, 6-9, 13, 17-18 and 21-22 above, and further in view of US 6,806,934 B2 (Furuhashi et al).

Regarding claims 5 and 10, Kim and Fukunishi teach the invention set forth above except for that the dielectric layer has an upper surface formed with concave and convex portions and a reflective electrode formed on the dielectric layer.

Furuhashi discloses (col.8, lines 5 – 62; Fig.12) that the overcoat layer (312) (normally the overcoat layer formed of insulating material and functions as a dielectric layer) has an upper surface with concave and convex portions (corrugated surface), and pixel electrode (138) with dielectric multilayer (110) formed on the corrugated surface of the overcoat layer (312), such that the pixel electrode (138) having reflective surface as a reflective electrode formed on the overcoat layer (dielectric layer). Furuhashi indicates (col.8, lines 11-15) that the uneven surface of the overcoat layer (312) (dielectric layer)

having corrugated (concave or convex) portions increases the reflection rate in direction other than the angle of mirror reflection that means widen the viewing angle.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the liquid crystal display of Kim and Fukunishi with the teachings of forming the dielectric layer with concave and convex portions and a reflective electrode formed on the dielectric layer as taught by Furuhashi, since the skilled in the art would be motivated for increasing the reflection rate in direction other than the angle of mirror reflection that means widen the viewing angle (see col.8, lines 11-15).

5. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim and Fukunishi as applied to claims 1-2, 4, 6-9, 13, 17-18 and 21-22 above, and further in view of US 6,323,932 B1 (Zhang et al).

Regarding claim 19, Kim and Fukunishi teach the invention set forth above except for that the dielectric layer is an organic layer.

Zhang discloses (col.7, lines 54-60; Fig.2C) that using an organic material for the interlayer insulating film (229) (functions as the dielectric layer) a large film thickness is easily provided, so that using organic layer as the dielectric layer would easily provide a large film thickness.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the liquid crystal display of Kim, Fukunishi with the teachings of using organic layer as the dielectric layer as taught by Zhang, since the

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skilled in the art would be motivated for easily providing a large film thickness. (see col.7, lines 54-60)

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-2, 4-10,13,17-19, 21-22 have been considered but are moot in view of the new ground(s) of rejection.

The amended claims seem to change the claimed invention from the Fig.2 to the Fig.7, and that is a different embodiment.

### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.



8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299.

The examiner can normally be reached on M-T 8:00 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mike Qi  
March 11, 2006

  
ANDREW SCHECHTER  
PRIMARY EXAMINER